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IMPACT OF FIRM SIZE ON THE EXPORT PERFORMANCE IN MANUFACTURING COMPANIES IN BOSNIA AND HERZEGOVINA

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Abstract
Exports play an important role in the economy of Bosnia and Herzegovina, influencing the level of economic growth, employment and the balance of payments. The objective of this research is to analyze impact of the firm size (revenue and number of employees) on export performance in manufacturing sector in Bosnia and Herzegovina. These are performed to test whether the firm size has a positive effect on the export performance. Secondary, audited financial performance data of 4077 manufacturing companies, covering the period from 2012-2017 were analyzed. A knowledge gap is clearly visible since Bosnia and Herzegovina is still having more imports than exports, which is resulting in negative trade balance.
Descriptive statistics were used in the means of correlation and regression in order to analyze impact of firm size on the export performance and provide the evidence that firm's characteristics, such as size and revenue have impact to the export performance of manufacturing companies in Bosnia and Herzegovina. Results confirmed the main hypothesis that the firm size has a positive effect on the export performance in manufacturing companies in Bosnia and Herzegovina. Those results are expected to help and guide governments and companies in Bosnia and Herzegovina behave and make significant changes when it comes to exporting. Since no similar research was previously conducted in the country, it will be a contribution to the poorly developed research area. Further research should explore related topics such as impact of industry on competitive advantage in international trade.

Keywords: international trade, profitability, developing countries, manufacturing, performance

JEL Classification: M21, M20, F31, G18, P33

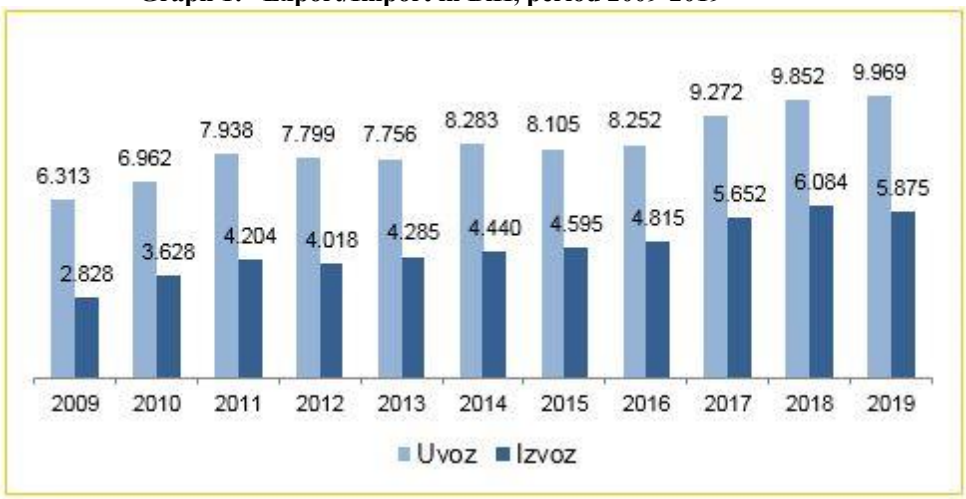
I. INTRODUCTION

The objective of this research is to test the influence of the firm size (revenue and number of employees) on export performance in the manufacturing sector in Bosnia and Herzegovina. Development process of one country should include export, since it plays a crucial role. To enhance profitability of the firms and achieve economies of scale, firms should have access to global market. In other words, higher exports enable a country to meet its growth. The simplest foreign market entry mode is exporting hence, it is important to study the factors that can affect the firm's export intensity, measure commonly used to assess the export performance. The export of one country highly determines the position of that country in the world economy therefore every country in order to influence it's GDPR. It is important to analyze the factors that influence the export performance, therefore many researchers analyses factors that improve the export performance. According to Newman's latest analysis, Bosnia and Herzegovina exported $6.25B in goods and services and was 100th largest exporter in the world. The biggest exporters are the manufacturing companies such as cars industry parts with 7.08% of the total exports and Leather Footwear 4.02%. During the last five years the exports of Bosnia and Herzegovina have increased at an annualized rate of 4%, from $5.22B in 2012 to $6.25B in 2017. The most recent exports are led by car industry parts which represent 4.92% of the total exports of Bosnia and Herzegovina, followed by electricity, which account for 4.72%.

However, Bosnia and Herzegovina is still having more imports than exports which results with the negative trade of $3.83B in net imports. As compared to their trade balance in 1995 when they still had a negative trade balance of $693M in net imports (Newman, 2017).

This research analyzes the data from manufacturing industries to find the relationship between firm characteristics and export performance in Bosnia and Herzegovina.

Graph 1: "Export/Import in BiH, period 2009-2019"



Source: Agencija za statistiku BiH based on
http://fipa.gov.ba/informacije/statistike/izvoz_uvoz/default.aspx?id=211&langTag=hr-HR

Bosnia and Herzegovina exported EUR 5.875 billion, between January and August 2019 which is 3.4% less than 2018. During that same period, it imported EUR 9.969 in 2019 and EUR 9.852 in 2018 ("Unapređenje stranih investicija", 2020).

When one country imports more than it exports, it has a trade deficit. From the terms of export performance and the firm characteristics, there are plenty of papers that have outlined the relationship between these variables.

The study conducted by Fu et al. (2009), as cited in Reis and Forte (2016) from a sample of 36,941 Chinese industrial firms (between 1999 and 2003) concludes that firm size, measured by the number of employees, positively affects the firm's export intensity (Fu at al.,20109, as cited in Reis & Forte,2016).

However, in Bosnia and Herzegovina, this relationship has not been sufficiently elaborated, and research findings conducted in neighboring countries were main cause to start this research in Bosnia and Herzegovina.

II. LITERATURE REVIEW

Below is the list of reviewed literature that was used to extract conceptual model. Several papers investigated factors that influence export performance and firm characteristics as important determinants of firm's export. Those were used as a baseline to propose a model for this study. Other papers were used to examine in details factors that have been mentioned in the baseline.

Export is a key activity for the economic health of nations, because it contributes largely to the improvement of living standards as well as economic growth and trade balance. Export have impact on increase in domestic production capacity, accumulation of foreign exchange reserves and the enhancement of industrial productivity and it opens the new job opportunities. Exports have several benefits for firms, ensuring their survival and growth. Therefore, to study the determinants that influence a firm's export intensity is essential not only for firms but also for the governments since they have huge role in it (Moghaddam et al, 2012).

Jalali (2012) stated that the export performance is regarded as one of the key indicators of the success of a firm's operations. Export performance is defined as the outcome of a firm's activities in the export market, as the extent to which a firm's objectives, both strategic and financial, with respect to exporting a product to a market, are achieved via the execution of the firm's export marketing strategy, as the degree to which the firm accomplishes its goals when selling an item to an international business sector and as the outcomes from the firm's international activities (Jalali, 2012).

Several authors have studied the factors that influence a firm's export performance, but few have addressed the relationship between industry characteristics and export intensity. The objective of the present study is to analyze the impact of industry characteristics on a firm's export intensity, the latter a measure commonly used to assess export performance, seeking to add empirical evidence to this relatively neglected research area (Reis & Forte, 2016).

Researchers addressed the issue concerning the factors that influence export performance and also analyzed the influence of industry characteristics on the firm's export intensity (Musleh et al, 2009). Besides

that, few researchers divided determinants of export performance into internal / external and controllable / uncontrollable (e.g., industry characteristics are considered external and non-controllable), stating just some of the industry characteristics such as technological intensity and level of instability (Zou & Stan. 1998).

Similarly, authors explained foreign market characteristics which are considered as external factors. Those characteristics are: market competitiveness and the domestic market characteristics as export assistance and environmental hostility. On the other hand, internal factors are: export marketing strategy, the 4 P's in marketing (product, price, promotion, and place referred as distribution strategy), the firm's characteristics such as size, age, and international experience, and also characteristics of the firm's management such as education, age, and international experience (Sousa, 2008).

According to their review the existing literature has focused on the impact of internal factors.

Based on a sample of 1,425 Portuguese firms during the period 2008-2010, the empirical results show that some industry characteristics (labor productivity, export orientation, concentration), as well as firm characteristics (labor productivity, size) are important determinants of firm's export. Those authors have found that firm characteristics and industry characteristics are from huge determinants of firm's export.

Firm export intensity is positively affected by labor productivity (at industry and firm level), corroborating the idea that to improve competitiveness in foreign markets, firms and governments need to direct their policies towards increased productivity. In fact, we conclude that firm export intensity is positively affected by labor productivity (at industry and firm level), that is, firms exhibiting higher productivity and in industries characterized by higher productivity levels tend to export a higher percentage of its sales. According to those particular authors and their paper in which they used sample of 1,425 Portuguese firms in the period of two years they found that firm characteristics such as in this case labor productivity have positive effect on firm export intensity (Reis & Forte, 2016).

For each company, depending on export behavior, commitment, and the priorities of different exporters motivating factors to enter or expand exports are different. In determining the success or failure of a company's export efforts, motivating factors to enter or expand exports are different (Muranda, 2004). Furthermore, Muranda (2004) and Wagner (2011) focused on the relationship between firm characteristics of manufacturing exporters and constructs that define factors constraining export growth and competitiveness. Zimbabwe's export growth has fallen by 7.2% over the past two years due to politically induced economic crisis (Muranda, 2004, as cited in Wagner, 2011).

In Pakistan researchers have investigated the impact of firm level characteristics on the performance of the life insurance sector of Pakistan over the period of seven years. After performing OLS regression analysis they concluded that performance of OLS is negatively and significantly related to the leverage. Growth and age of the firm has negative relation to performance of life insurance companies, but they are statistically insignificant. This study shows that performance of life insurance companies is positively and significantly related to the firm size. This is a good indicator that performance of large size insurance companies is better than the small size ones. According to this study, tangibility of assets and liquidity also has a positive relation to performance of life insurance companies, but they are statistically insignificant (Afza & Ahmed, 2011). Similarly, researchers from New Zealand have focused primarily on firm characteristics, such as size and age, also neglecting the characteristics of the industry. Export growth requires not only entry into new markets, but also the survival of trade flows (Iyer, 2010). Zou and Stan (1998) also mention two characteristics of the industry such as, technological intensity and instability (Zou & Stan,1998).

Sheridan (2012), investigated the relationship between disaggregated exports and growth to address why many developing countries rely on primary goods as their main source of export income when evidence suggests they could earn higher returns by exporting manufactured goods. Using regression tree analysis, researcher finds that although increasing manufacturing exports is important for sustained economic growth, this relationship only holds once a threshold level of development is reached. The results imply that a country needs a minimum level of education before it is beneficial to transition from a reliance on primary exports to manufacturing exports (Sheridan, 2012). Calof, (1994) stated that firm size as variable that characterize firm had received enormous attention. Researchers still investigate on the impact this variable has on international business operations (Calof, 1994). Tookey, (1964) on one hand, suggested a positive correlation between firm size and export performance. Research into export performance dates back to the innovating work of Tookey (1964); since then there have been numerous studies published over the last four decades that have been concerned with the export performance of the firm. However, in spite of these research efforts, there is a lack of synthesis and agreement in the conceptualization and operationalization of the construct.

Firm size is one of the most influential characteristics in organizational studies. Chen, & Hambrick (1995) provide a summary and overview of the importance of firm size. Vertical integration and overall industry profitability are also related to the firm size (Chen & Hambrick, 1995). Zadeh & Eskandari, (2012) have described how firm size measurement can be carried out in couple of methods through sales, employees, assets or value-added features.

Only sales figures or assets derived from capital inputs on economy scale theoretically would be used for measurement purposes. Derived from this sales and assets are not inappropriate methods of measurements for size; regarding how transactions and the range of costs impact the profits in agencies. Value of physical assets are not the fundamental way the organization is controlled, costs are. Measuring the size of the firm in organizational theories one should look for the employee's enrolment and value-added measurement rather than sales or assets. (Zadeh & Eskandari, 2012). An essential aspect of a research into a business activity must include the firm size. Agency theory highlights the fact that the bigger a firm is the higher the monitoring and agency costs will be due to the asymmetrical information (Kaen, 2003).

Based on Souissi and Khlif (2012), larger firms have stronger motivations to disclose more information. Watson, Shrives, and Marston in their study "Voluntary disclosure of accounting ratios in the UK" published in 2002, added that for larger firms, especially listed firms that have easy access to direct financing based on their amount of disclosures, it assists in the reduction of the level of uncertainty regarding the firm's performance (Watson, 2002). Firm size, human capital intensity, physical capital intensity and R&D intensity are standard firm characteristics used in empirical studies of export activities of firms (Souissi and Khlif, (2012), as cited in Wagner, 2011).

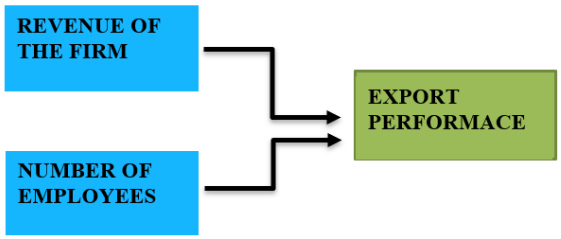
III. METHODOLOGY

Based on previous research we used descriptive statistics, correlation and regression to study the effect of firm size on the export performance in manufacturing companies in Bosnia and Herzegovina with number of employees and revenue as measurement of the firm size. Research purpose was to collect statistical evidence of 4077 manufacturing companies in Bosnia and Herzegovina in order to present results to support answers for the following research question:

Q: How firm size influence export performance of the manufacturing companies in Bosnia and Herzegovina?

Statistical evidence was narrowed down in order to collect indicators that closely correspond to firm characteristics and export performance using advanced statistical software. Secondary finance performance data of 4077 companies, covering the period from 2012-2017 are analyzed. Sample set of manufacturing companies from all parts of the country was formed randomly. Based on the picked companies, data was collected through Tron business intelligence database containing audited financial reports of all companies doing business in Bosnia and Herzegovina ("Tron", 2019). Data collection took place in the period from December 2018 until March 2019. This research begins with a general overview of the whole manufacturing companies through its size, determined by using total revenues and number of employees. Sample set of collected data was analyzed through statistical methods, descriptive statistics, correlation and regression. In this research authors tested the main hypothesis that states: H1: Firm size has a positive effect on the export performance in manufacturing companies in Bosnia and Herzegovina. Analysis of the research question and hypothesis was performed by applying linear regression between defined dependent and independent variables. To address analysis accordingly following research model is proposed within Figure 1.

Figure 1 -"Research model (proposed by authors based on literature review)"



In the proposed research model, independent variables are:

Firm size defined as number of employees and revenue of the firm.

Dependent variable is export performance.

Export performance is expressed as financial value in amount of KM from export revenue. Using the proposed research model, we commenced with data analysis and results with aim to prove the hypothesis.

IV. DATA ANALYSIS AND RESULTS

The model was made on a total of 4077 companies data collected in the period from 2012 to 2017. A linear regression analysis has been done with two independent variables: revenue and number of employees.

Dependent variable is export performance.

Figure 2: "Descriptive statistics Source: Authors"

	M	SD	Min	Max
Revenue	3.294.275,70	22.406.026,25	0	1.249.661.451
Number of employees	28.63	97.77	0	3.005
Export performance	1.272.476,83	10.779.198,21	0	440.967.127

Based on the results shown, we see that the average sales revenue is M = 3,294,275.70 (SD = 22,406,026.25). The high value of standard deviation indicates a high variability in the value of sales revenue among the companies, which was expected as many companies of different industry, size and age are included in the sample. The average number of employees was M = 28.63 (SD = 97.77). And in this case, we see that the values are quite variable, as indicated by the fact that individual companies had 0 employees (minimal value) and some 3,005 sealed (maximum value). At the end of the average value of export earnings amounted to M = 1,272,476.83 (SD = 10,779,198.21). As we can see, we have here general data, which is expected to produce some very interesting findings. Following part with correlation analysis will give more insights.

Figure 3: "Correlations"

		Export performance	Revenue	Number of employees
Pearson Correlation	Export performance	1.000	.823	.581
	Revenue	.823	1.000	.510
	Number of employees	.581	.510	1.000
Sig.	Export performance	.	.000	.000
	Revenue	.000	.	.000
	Number of employees	.000	.000	.
N	Export performance	24456	24456	24456
	Revenue	24456	24456	24456
	Number of employees	24456	24456	24456

Above is the correlation of the variables on which we examined the model. First of all, we see that there is a statistically significant correlation ($p < 0.05$) between all the variables in the model. The correlation between exports and sales revenue is 0.823, which shows the high correlation between these variables. Furthermore, the correlation between export earnings and the number of employees is 0.581, and the correlation between the sales revenue and the number of employees is 0.510. The resulting positive correlation indicates that increasing the value in one variable leads to an increase in the validity in another variable.

Generally speaking, this indicates that there is strong link between the total revenue and export performance. At first, we can say that it might mean that larger companies do not comprehend that is expected to be export oriented. On the other hand, we can see that companies with larger revenue export more. There could be many foundations for that better export performance, but we have to annotate here that this phenomenon could be seen other way round: higher revenue might come from better export performance. This can mean more competitive companies earn higher revenues. We will consider this phenomenon further through other analyses.

Figure 4: "Model summary"

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.844[a]	.713	.713	5774856.866

We checked the model in which we examined how revenue and the number of employees affected the export performance. Obtained results that show that 0.713 or 71.3% of the variance of income of the statement

can be explained through revenues and the number of employees. This is very large, meaning that size of the company and its revenue explain its export performance variance to a large extent. In the previous analysis, we have seen that revenue has higher correlation than size of the company with its export performance. Now we see when these two variables combine, they explain export performance of the company to a large extent.

Figure 5: "ANOVA"

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2025971288000000000.000	2	1012985644000000000.000	30375.319	.000
	Residual	815482408100000000.000	24453	33348971830000.000		
	Total	2841453696000000000.000	24455			

The results of ANOVA or variance analysis confirm that the model tested was statistically significant at $p < 0.05$. As we have found out earlier, when this model includes both, size and revenue of the company, it can be used to explain the export performance of a company.

Figure 6: "Coefficients"

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for Beta	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-542759.977	38478.464		-14.106	.000	-618180.091	-467339.864
	Sales	.343	.002	.713	178.858	.000	.339	.347
	Number of employees	23957,850	439.206	.217	54.548	.000	23096.980	24818.719

The values of the non-standardized beta coefficient for sales revenues is B = 0.343. This means that an increase of revenue increases export performance by 0.343. The 95% confidence interval tells us that this value is in the range of 0.339 to 0.347.

Figure 7: "Residuals Statistics"

	Min	Max	M	SD	N
Predicted Value	-542760.00	429941344.00	1272476.83	9101915.715	24456
Residual	-172981840.000	230878992.000	.000	5774620.719	24456
Std. Predicted Value	-.199	47.097	.000	1.000	24456
Std. Residual	-29.954	39.980	.000	1.000	24456

At the end it is important to check whether the arithmetic mean of the residual is equal to zero, which in this case is equal to zero.

V. CONCLUSION

Export performance, as we can see from literature review, is of high interest for both academia and national economies. In case of smaller and developing countries, such as Bosnia and Herzegovina, this becomes even more important. International trade plays a very important role in national economy and that is why all factors influencing it should be thoroughly analyzed. Bosnia and Herzegovina have to be more competitive in long term period compering to neighboring countries but also resistant to short-term disturbances. As we can see from the results, both variables number of employees and total revenues significantly impact the export performance. However, number of employees matter less than total revenue. Limitations were created for the purpose of this study. First for this research 4077 manufacturing companies from the Bosnia and Herzegovina were taken into consideration. For more detailed research, longer period allows more data to be taken into consideration so here we have time period as a constraint, for second limitation. As last limitation for this research is geographical kind, analyzing manufacturing companies in Bosnia and Herzegovina. This research was able to find a research gap in the fact that the firm size in terms of number of employees and revenue was never used as a variable that could affect exports of manufacturing companies in Bosnia and Herzegovina. In

addition, Bosnia and Herzegovina was never the main topic of previous literature. The findings of this research paper could permit the creation of other hypotheses. The main practical contribution of this research paper is the knowledge of the positive relationship between the firm size and the export performance of manufacturing company in Bosnia and Herzegovina during the period of 5 years between 2012 and 2017. Variables as affiliation of the company or political influence can be introduced in new research conducted in this region. Further research should explore related topics such as impact of industry on competitive advantage in international trade

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